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ARCHEOLOGY AND ETHNOLOGY.<sup>1</sup>

**Discovery of Shell Mounds in Chira Valley, Peru.**—It was my good fortune, during the last four years, to discover in the Chira Valley in the northern Part of Peru, a vast field of antique remains hitherto unknown to the scientific world. The Chira River which is the most northerly of the important coast streams running from the Andes to the Pacific, is situated about one hundred and fifty miles from the frontier of Ecuador, and nearly six hundred miles to the north of the great Ancon necropolis, recently so exhaustively studied by Reiss and Stübel. Between the Chira and Ancon are two fields already well known—one the great Chimer and Trujillo and the other near Chimbote in the Santa Valley.—Trujillo lies some 225 miles to the south of the Chira.

Fifty or sixty miles north of the Chira is a smaller valley called the Pariñas. Between the two is a desert region extending inland to the La Brea Mountains, a distance of thirty miles. These two valleys and the intervening territory, an area of 1800 square miles, comprised my field of work. The exact locality may readily be determined upon any map of South America as it embraces Point Pariñas which is the most westerly Cape of the Southern Continent.

It was among the ruins and graves of the Chira Valley that I gathered the Collection of Antiquities now deposited in the Museum of the University of Pennsylvania. These ruins and graves occupy as a rule all the untillable land on the northern side of the valley from the town of Sullana to the mouth of the River, a distance of forty or fifty miles. The ruins are unique among those I saw in Peru. They lie in groups four or five miles apart and consist of terraced temple platforms of three stories, built of clay reinforced with conical shaped adobes. The whole edifice is about three hundred feet in length and breadth at the base and seventy-five feet in height. Adjoining these pyramidal structures are always found extensive traces of adobe walls, doubtless the remains of the foundations of priestly dwellings, for it is fair to suppose that these monuments had a sacred character. At the foot of the ruins are arranged numerous hillocks thickly covered with small white bivalve shells. Under the shells the soil is full of fine ashes and sherds of pottery. The surrounding plain is always crowded with graves, often three or four tiers deep to a depth of twenty-five feet. A

<sup>1</sup> This department is edited by H. C. Mercer, University of Pennsylvania.

feature of these graves seems to prove one of the statements made by Cieza de Leon in his account of the Civil Wars in Peru. According to him the natives of this northern region were in the habit of sacrificing at their burials and of throwing the remains of the sacrifice into the grave. In excavating I found the soil above the graves thickly mingled with charcoal, burnt bones, ashes and other refuse. In addition to this refuse I also encountered numerous white shells, both bivalve and spiral, in the sand, and the entire surface of the necropolis is lightly covered with similar shells which have probably been washed out by the rains. As it is to the constant occurrence of the small white shell in the graves and other remains of this region that I wish to draw attention, I shall omit here any description of the graves themselves.

In the Pariñas Valley the ruins are less elaborate in character. At the mouth of this river, close by the sea, is a large artificial mound about an acre in extent and thirty-five feet high, filled with bones and fragments of coarse pottery. Occasionally it is possible to find a rough pot or olla of burnt clay. Close to this mound are several smaller ones of similar character. All of these, including the great mound, are covered on the surface with the white shells. Throughout the valley, wherever natural elevations have been used as burial places, these shells again occur and the pottery of the graves is of the same low order. Ruins of adobe walls, sometimes buried several feet below the present level of the valley, are also to be found at several places along the Pariñas River.

There are in the desert itself three or four wells in the neighborhood of which are buried ancient walls. Associated with these walls we invariably find some natural elevation, containing bones and pieces of pottery, covered with the shells as in the Pariñas Valley. Everything seems to indicate that these ruins at the wells and along the Pariñas belong to much earlier epoch than those which exist in the valley of the Chira.

In the very heart of the desert, however, I found remains of an entirely different order. These are situated about twenty-five miles south-west of Point Pariñas four miles from the sea shore. At this point for several square miles the plain is crowded with irregular mounds, some forty or fifty feet in height, composed entirely of white bivalve shells slightly mixed with sand. These might be taken for natural formations were it not that each contains a central core which is filled with charcoal, burnt shells and other signs of fire. Owing to my work in other directions I was not able to devote much time to these mounds. Although repeated digging revealed neither bones nor

pottery, I am convinced from the charcoal and other indications that these remains are of human origin and I am thus able to make known for the first time the existence of the true shell mound in Peru. That these mounds are mere heaps of loose shells rather than compact masses, as in Florida, and other places is no argument against their great antiquity, for in the practically rainless desert region in which they are found they might easily have remained unchanged for many ages.

Before attempting to draw any conclusions from the data afforded us by the different classes of remains which exist in this locality about the Chira Valley, it will be necessary to take a brief survey of what is known of its history. We have but one authority on this subject, Garcilasso de la Vega, and although his account is far from being a model of either history or chronology, it is certainly based upon tradition and is therefore full of suggestion. When the Incas set out to conquer the coast valleys they found them occupied by a warlike and well advanced race called the Yuncas, whose chief centre of power extended from the Chincha Valley near the modern Pisco, to the great Chimu at Trujillo while their dominion reached over all the surrounding tribes. According to their own legends these Yuncas were of foreign origin, and their ancestors, after affecting a landing in Peru, had through sheer innate superiority conquered their barbaric neighbors, and laid the foundations of the great nation which in time grew to the proportions in which the Incas found it. After subduing the Yuncas, the Incas proceeded northward and in the remote valleys of that region encountered a people of so low a condition, so poor and bestial that it was necessary to compel them to pay tribute in lice in the hope of teaching them the rudimentary principles of cleanliness. The Chira was one of these outlying valleys, but the millions of graves which it contains and the high civilization which they reveal, prove at once the chronological inaccuracy at least of de la Vega's story. It is probable that his errors arose from confusing Incan and Yuncan traditions, and that it was the Yuncas and not the Incas who came in contact with the barbarians.

It is hardly possible to suppose that the people of the shell mounds could ever have risen through their own efforts to so high a level as was obtained by the inhabitants of the Chira; it is even improbable that they could have done so with the aid of extraneous influence. A more likely theory is available. Before the coming of the Yuncas, a shell mound tribe occupied the desert adjacent to the mouth of the Chira and were either exterminated by invaders or had ceased to exist before their arrival. After the manner of all semi-civilized or semi-

barbaric peoples the new comers regarded the gleaming white shell mounds of their predecessors with superstition, attached to them a sacred significance and were not long in incorporating the shell into their own ritual. This we see in the shell *covered* mounds and burial hills of the Pariñas Valley. In the Chira Valley we find that an advance has been made, the burial mound of the Pariñas here becomes the temple platform and the shells appear on the hillocks surrounding it and in the grave fillings. It is true that these hillocks seem to have been ovens in which pottery was baked, but this in no way alters the significance of the shells which cover them. The pottery, especially the fantastic and carefully finished pieces found in the graves, must have had a ritualistic meaning and the ovens in which it was baked must also have been regarded as sacred, and when no longer used were consecrated with a covering of the revered shells.

A more difficult problem seems to present itself in the difference which exists between the remains of the Pariñas and those of the Chira. Tradition again aids us in overcoming it. There is a story that the Pariñas Valley was once thickly populated (it is now practically uninhabited), and that for some reason, probably drought or plague, the people were compelled to abandon it and seek homes in the valleys to the south. This migration probably took place prior to the epoch in which the custom arose of symbolizing the mound in the temple, and before the pottery art was so highly developed as it latterly became. This desertion of the Chira Valley at so early a period has therefore preserved for us an important link in the chain of the nation's progress.

This view of the adoption of the shell of the old kitchen mounds as a sacred token by the conquerers or successors of the primitive race, serves also to explain the comparatively limited extent of such mounds, for undoubtedly the shells of the graves and ruins were obtained from these deposits and in this way many of the old mounds were destroyed. This theory also accounts for the absence of shells in the other grave fields of the coast.

As I said before this necropolis of the Chira is new to science and is deserving of attention and exploration. It presents many unique features in Peruvian Archeology. The bodies are buried horizontally at full length, with the head resting on the left shoulder and the face turned in the same direction, whereas in other regions the body is invariably trussed up in sitting posture with the knees drawn under the chin. I also found that the use of the labret was common among the females, a custom hitherto unknown among the tribes of the coast regions of Ancient Peru.

From the tools and other implements which I brought back, Mr. Frank Hamilton Cushing of Washington has been able to prove that the lacquer art was known to those people; that the goldsmiths art, of which it is possible to show all the processes, was very cleverly practiced, and lastly he has been able reconstruct for the first time the ancient Peruvian loom and to demonstrate the methods by which all the intricate fabrics of that time were woven. It is sincerely to be hoped that before long he will be able to present these wonderful and most valuable discoveries to the world.

—SAMUEL MATHEWSON SCOTT.

Mr. H. A. Pilsbry, of the Academy of Natural Sciences of Philadelphia, has kindly identified the shell specimens collected by Mr Scott at these shell heaps, as *Spondylus princeps* (Brod.), Gulf of California, etc.; *Natica panamensis* (Recluz.); *Trivia radians* (Lam.), St. Elena, west coast of Columbia, *Donax radiatus* (Valenc.), Mazatlan to Valparaiso; *Terebra fulgurata* (Philippi), Mazatlan. The large thorny *Spondylus* would, he says, roast well. The delicate little *Donax* would make excellent soup, and the *Natica* would be found as edible by the Peruvian Indian as its Periwinkle brother has been by the North American Red Man, whose shell heaps and village sites are thickly strewn with it. The modern Londoner, as Mr. Pilsbry informs me, eats tons of the same snail yearly. Minute *Terebræ* and *Olivæ*, if not boiled for soup, might have done for trinkets.

H. C. MERCER.

**The Neanderthal Man in Java.**—Dr. Eugene DuBois of the Army of the Netherlands has recently published in Batavia, Java, in a brochure in quarto, an account of some bones of an interesting quadrumanous mammal allied to man, which were found in a sedimentary bed of material of volcanic origin, of probably Plistocene age. The remains consist of a calvarium which includes the supraorbital ridges and a part of the occiput; a last superior upper molar; and a femur. The tooth was found close to the skull and probably belongs to the same individual as the latter, while the reference of the femur is more uncertain, as it was found some fifty feet distant.

The characters of the skull are closely similar to those of the men of Neanderthal and of Spy, but the walls are not so thick as those of the former, and more nearly resemble those of the latter. The frontal region is, therefore, much depressed, and it is also much constricted posterior to the postorbital borders. The sutures are obliterated. Much interest attaches to the cranial capacity, which Dr. DuBois

states to be just double that of the gorilla, and two-thirds that of the lowest normal of man, bridging the gap which has long separated the latter from the apes. Thus the capacity of the former is 500 cubic c. m.; and the latter is 1500 c. c. m. In the Java man the capacity is 1000 c. c. m. The last upper molar has widely divergent roots as in apes and inferior races of man, and the crown is large, with the cusps not clearly differentiated, showing a character commonly observed in the lower molars of the gorilla. The femur is long, straight, and entirely human.

This important discovery of Dr. DuBois adds materially to our knowledge of the physical characters of the paleolithic man, and especially to his geographical range. As is well known, his remains have been found hitherto in Europe only, (Neanderthal, Spy, Naulette, Shipka, etc.), but now it is evident that he ranged over almost the entire width of the Old Continent. This discovery confirms the anticipation expressed by evolutionists, including those published in the NATURALIST for April, 1893, (The Genealogy of Man), and October, 1894.

As regards the proper appellation of this being, Dr. DuBois is not entirely happy. He proposes for him a new genus, *Pithecanthropus*, (after Haeckel), and even a new family, *Pithecanthropidæ*, without having shown that he is not a member of the genus *Homo*. It is not certain that he is not an individual of the species *Homo neanderthalensis*. His cranial capacity is less, it is true, than that of the man of Spy, and it is possible that this really constitutes a character of specific value. Disusing then, Dr. DuBois' name *Pithecanthropus*, we have left as the appellation, *Homo erectus* DuBois. This name is distinctly absurd, as it is applicable to all members of the genus *Homo*. The law of priority, however, requires that we use it in case the species is new.

It is interesting to observe the differences of opinion expressed by paleontologists as to this discovery. Prof. Marsh, in a late number of the Amer. Journ. of Sci. and Arts, adopts *Pithecanthropus* and *Pithecanthropidæ*; while Dr. Lydekker, in Nature, expresses the opinion that the remains belong to a microcephalic idiot.—E. D. COPE.